(NASA-CR-133394) INFRARED SITE MONITOR OPERATIONS AT MCDONALD OBSERVATORY Final Report (Texas Univ.) 3 p HC $3.00

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Unclas 17885

FINAL REPORT, NGR 44-012-202

(INFRARED SITE MONITOR OPERATIONS AT McDONALD OBSERVATORY)

The Infrared Site Monitor was installed at McDonald Observatory on March 23, 1971 and was then operated under the immediate supervision of C. Laughlin until July 14, 1972. A water vapor meter was added on June 2, 1971 and used thereafter until July 14, 1972.

Routine operation consisted of filling the liquid nitrogen reservoir surrounding the detector assembly each day, filling the liquid helium reservoir every other day and making a measurement of precipitable water vapor in the atmosphere at about local solar noon each day. In addition, the chart recorder paper was changed at the end of each month. Before the old chart was removed a prescribed calibration procedure was followed and then these calibrations were repeated at the beginning of the new chart.

The chart recorder roll, a log of daily water vapor measurements and a note regarding any problems or unusual occurrences noted during the month were then sent to Mr. E. Lorenz at CIT near the first of each month.

Filling the nitrogen jacket each day required about 15 minutes and about one liter of liquid nitrogen. Filling the helium dewar every other day required about one hour and between 4 and 5 liters of liquid helium from the supply dewar. Changing the recorder chart and calibrating once per month required about an hour with the calibrating activities spread over an 8-hour period. Reading and recording the water vapor measurements required about 5 minutes per day.

Obtaining regular shipments of liquid helium was a continuing operational problem and lack of helium was the greatest cause of down-time on the instrument. Occasional problems with the detector assembly and liquid helium transfer tubes were caused by loss of vacuum. These were usually solved by re-evacuating the components at McDonald and putting them back into service. Minor operational problems were usually solved by means of telephone conversations with CIT personnel.

Major problems with various components were solved by installation of replacement components sent from CIT as noted below:

June 1, 2, 1971: CIT personnel replaced detector assembly and blockbody.

July 20, 1971: Replaced water vapor meter.

March 29, 1972: Replaced Amplifier.

April 19, 1972: Replaced Window Box, Power Supply, Black Body and Amplifier.

Routine maintenance, such as washing the mirrors, and replacing humidity sensors and other minor components was done as necessary.

A chart is attached showing monthly rainfall totals for the period during which the IR monitor was operated. For comparison, 30-year monthly means for this location are shown also.

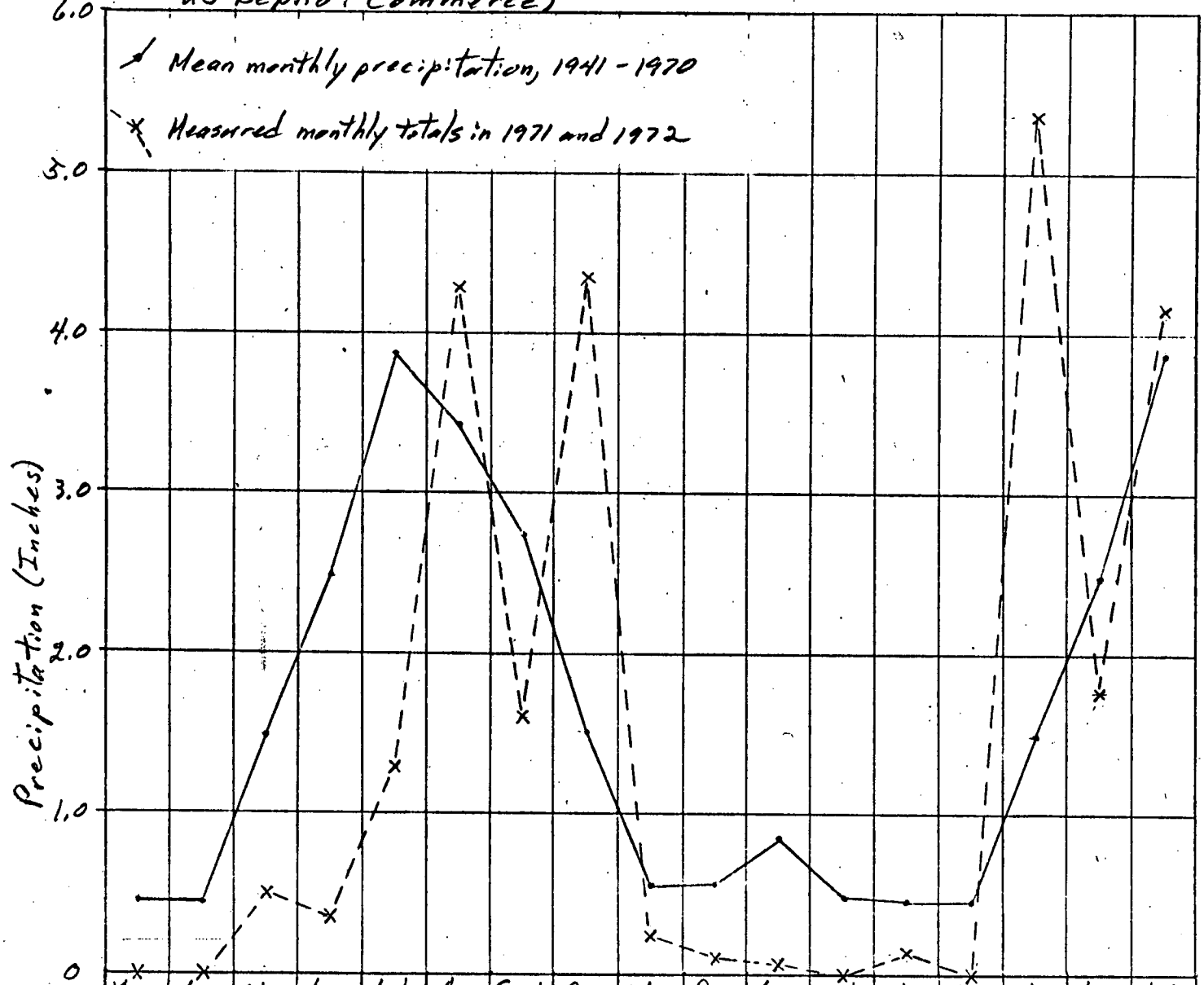
A table of hourly sky condition reports for the operational period of the IR monitor is available, but too lengthy to append unless requested as being of real use.

Hurbert J Smith

McDonald Observatory Monthly Rainfall, March, 1971 through July, 1972

(Monthly means for 1941-1970 are data supplied by the US Dept. of Commerce)

Sept 5 '72
CAR



	Mar 1971	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec 1971	Jan 1972	Feb	Mar	Apr	May	June	July 1972	Totals for period shown
1941-70 mo'ly mean	0.46	0.46	1.49	2.48	3.87	3.42	2.75	1.51	0.56	0.56	0.83	0.48	0.46	0.46	1.49	2.48	3.87	27.63
Mo'ly totals in 1971, 72	0	0	0.5	0.35	1.29	4.29	1.6	4.35	0.23	0.1	0.08	0	0.14	0	5.36	1.76	4.14	24.19

THE UNIVERSITY OF TEXAS AT AUSTIN
COLLEGE OF NATURAL SCIENCES
Department of Astronomy
AUSTIN, TEXAS 78712

April 16, 1973

Dr. William E. Brunk
Code SL
NASA Headquarters
Washington, D. C. 20546

Dear Bill,

Enclosed is a brief final report on the McDonald branch of the IR Site Survey Program (NGR 44-012-202).

Conditions were not especially unusual during that year of operation.

With our appreciation again for the opportunity to participate,

Sincerely,

Harlan J. Smith

HJS:cc

Enclosure